19. The switch as claimed in claim 18, further comprising:

a resistor having a first end connected to said anode electrode and a second end supplied with said ground potential.

REMARKS

This paper is being provided in response to the September 19, 2000 Office Action for the above-referenced application. In this response, Applicant has made minor modifications to the specification, amended Claims 1 and 5, and added new Claims 10-19 in order to more particularly point out and distinctly claim that which Applicant deems to be the invention. Applicant respectfully submits that the changes to the specification do not add new matter and that the amendments to the claims, and the new claims, are all supported by the originally filed application.

The objection to Claim 5 due to informalities has been addressed by amendments in accordance with remarks set forth in the Office Action. Accordingly, Applicant respectfully requests that this objection be withdrawn.

The rejection of Claims 1-9 under 35 U.S.C. 112, second paragraph, has been addressed by amendments to the claims herein. Accordingly, Applicant respectfully requests that this rejection be withdrawn.

The rejection of Claims 1 and 5 under 35 U.S.C. 102(b) as being anticipated by Fleming et al., *Ga As SAMP Device for Ku-Band Switching* (hereinafter referred to as "Fleming") is hereby traversed, and reconsideration thereof is respectfully requested.

Applicant's Claim 1, as amended herein, recites a semiconductor switch comprising a first electrode, a second electrode, and a third electrode formed on a semiconductor substrate. The first electrode and the second electrode are connected with the earth and disposed in parallel to each other. The third electrode is formed between said first and said second electrode. The third electrode is supplied with one of ground potential and a non-zero voltage potential so that said switch is rendered ON when said third electrode is supplied with said ground potential and said switch is rendered OFF when said third electrode is supplied with said non-zero voltage potential. A first terminal is coupled to one end of said third electrode, and a second terminal is coupled to the other end of said third electrode. Claims 2-4 depend directly from Claim 1.

Applicant's Claim 5, as amended herein, recites a switching circuit comprising a coplanar transmission line having a signal line. Conductors are arranged such that said signal line is sandwiched between the conductors. The conductors are applied to ground potential. The signal line is supplied with one of ground potential and a non-zero voltage potential so that said switching circuit is rendered ON when said signal line is supplied with said ground potential and said switching circuit is rendered OFF when said signal line is supplied with said non-zero voltage potential. An element has a first electrode coupled to said coplanar transmission line, a second electrode, and a third electrode in which the second and third electrodes are applied to ground potential. A signal terminal is coupled to said coplanar transmission line. Claims 6-9 depend directly from Claim 5.

Fleming discloses switchable attenuating medium propagation (SAMP) devices that are coplanar transmission lines on an epitaxial semiconductor (GaAs) substrate.

These transmission lines may be switched rapidly between states of high and low attenuation. Because they are uniform transmission lines, they can easily be characterized for impedance matching purposes and are well suited for use in microwave integrated circuits (MICs). (See Abstract). Figure 1 shows a SAMP design having a GaAs conducting layer with a cross section shown in his Figure 2. The ground plane makes ohmic contact to the GaAs and a center conductor being a Schottky barrier. In the On-state of this switch, a negative bias (-20 to –30V) is applied to the center conductor. In the Off-state of the switch, a positive bias (+0.8V) is applied to the center conductor. (Page 1, Figures 1 and 2).

Although Fleming states that zero bias can be used, ***the positive bias is absolutely needed from the point of view of isolation and high frequency demand.*** In effect, ***Fleming discloses an arrangement in need of two power source supplying system***. Moreover, the device characteristic of Fleming appears to be inferior even in a low frequency between 13 to 18GHz. Finally, Fleming discloses the structure of the switch in Fig. 1 which illustrates the switch simply has N-Epi layer and i-GaAs layer.

Accordingly, Applicant's Claim 1 is neither disclosed nor suggested by Fleming in that Fleming neither discloses nor suggests a semiconductor switch that include a first electrode, second electrode and third electrode formed on a semiconductor substrate in which the ***third electrode is supplied with one of ground potential and a non-zero voltage potential so that said switch is rendered ON when said third electrode is supplied with said ground potential and said switch is rendered OFF when said third***

electrode is supplied with said non-zero voltage potential, as set forth in Applicant's amended Claim 1.

The switch of Applicant's claimed invention is rendered ON when the third electrode is supplied with the ground potential and the switch is rendered OFF when the third electrode is supplied with a non-zero-voltage potential. For example, it is achievable to provide a transistor of normally OFF type, or the transistor being rendered in an OFF state when the gate bias is ground potential if the switch is comprised of a transistor. It is also achievable to provide a diode of being completely depleted under an anode electrode when the anode bias is ground potential and the switch is comprised of a diode. Therefore, the claimed invention as set forth in Applicant's amended Claim 1 is need of only ***single power source voltage***, resulting in a reduced number of power source circuits and costs associated therewith. In contrast, as pointed out above, Fleming discloses an arrangement that is need of ***two power sources*** due to the high frequency demand and isolation requirements, and thus, neither discloses nor suggests Applicant's arrangement of the third electrode including a single power source, as set forth in amended Claim 1.

For reasons similar to those set forth regarding Claim 1, Applicant's Claim 5 is also neither disclosed nor suggested by Fleming in that Fleming neither discloses nor suggests a switching circuit comprising ***a signal line is supplied with one of ground potential and a non-zero voltage potential so that said switching circuit is rendered ON when said signal line is supplied with said ground potential and said switching circuit is rendered OFF when said signal line is supplied with said non-zero voltage potential***, as set forth in Applicant's amended Claim 5.

In view of the foregoing, Applicant respectfully requests that this rejection be withdrawn.

The rejection of Claims 2-4 and 6-9 under 35 U.S.C. 103(a) as being unpatentable over Fleming is hereby traversed, and reconsideration thereof is respectfully requested.

For reasons set forth above, Applicant's Claims 1 and 5 are neither disclosed nor suggested by Fleming. Further, since Claims 2-4 and 6-9 depend from independent Claims 1 and 5, Claims 2-4 and 6-9 are also neither disclosed nor suggested by Fleming.

Furthermore, Applicant respectfully submits that the Office Action sets forth insufficient motivation as to why one of ordinary skill in the art would be motivated to modify Fleming to arrive at Applicant's claimed invention. The Office Action states that it would have been an obvious design choice to one of ordinary skill in the art to have used the coplanar transmission lines as taught by Fleming to realize a variety of electronic devices because the diodes and transistors as mentioned are well-known in the art, and it would have been an art-recognized use for coplanar transmission lines. Further the Office Action states that it would have been an obvious design choice to one of ordinary skill in the art to have formed the coplanar transmission lines as taught by Fleming on a well-known substrate such as one including an AlGaAs layer and an InGaAs layer (Claim 9) which would have been art-recognized equivalents of the disclosed GaAs substrate. (emphasis added)

Applicant respectfully submits that just because diodes and transistors are well-known does not provide sufficient motivation as to why one of ordinary skill in the art would use the coplanar transmission lines as taught by Fleming to realize a variety of electronic devices. Just because one of ordinary skill in the art may know about a variety

of electronic devices does not provide a suggestion or motivation to use coplanar transmission lines to realize them. The Office Action fails to identify where such motivation exists in the reference, or, alternatively, provides other evidence in support of the motivation. Furthermore, assuming arguendo that there is such motivation, it is unclear how a general teaching of electronic devices suggests, teaches, or discloses to one of ordinary skill in the art to arrive at the particular features of Applicant's claimed invention, and it is also unclear from the teachings of Fleming how one would modify Fleming to arrive at Applicant's claimed invention.

In support of the rejection under 35 U.S.C. 103, the Office Action makes statements regarding that which are obvious design choices and art-recognized uses. Applicant respectfully takes exception to these assertions and conclusions regarding the obvious design choices and requests to be provided with evidence in support of such statements.

In view of the foregoing, Applicant respectfully requests that this rejection be withdrawn.

Applicant respectfully submits that new Claims 10-19 are also neither disclosed nor suggested by the cited prior art. For example, Claim 10 recites a resistor having a first end connected to the third electrode and a second end supplied with the bias. This can render the third electrode to have a high resistance. One advantage of this feature of the present invention is to achieve higher isolation and lower insertion loss even in high frequency . (See Applicant's Fig. 3, for example). Another feature as included in Claims 11, 14, and 17 is the structure of the embodiments of the switch of the present invention (see Applicant's Fig. 1B, 4B and 8B, for example). Applicant respectfully submits that

Fleming fails to teach or suggest these features of the present invention as set forth in Claims 10-19.

Based on the above, applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-951-6676.

Respectfully submitted,
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